Detecting and Identifying Drug Impaired Drivers based on Observable Signs and Symptoms

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Abstract:
Background/Introduction: Driving under the influence of drugs is difficult to detect by untrained officers. The current Drug Evaluation and Classification Program (DECP) is based on research that is at least 30 years old, and therefore drug detection could benefit from the results of more recent studies.

Objectives:
To determine, whether there are specific behavioral signs and symptoms that are associated with specific drug impairments.

Methods:
Critically review literature cited in MEDLINE, PsycLit, SCI, SSCI, and TRIS; and organize the findings according to the drug(s) evaluated, the subject population, the dose levels used, the behavioral measures recorded, and the resulting effects. Analyses were done for each of the seven DECP drug classes: depressants, stimulants, narcotic analgesics, cannabis, hallucinogens, PCP, and inhalants.

Results:
Experimental studies are most common for the most commonly used drugs: marijuana and benzodiazepines (depressants). The scientific evidence on other drugs is meager. Findings with respect to specific drug classes show that (1) depressants as a class have effects similar to those of alcohol, with the exception of nystagmus that can serve for a differential diagnosis, (2) Marijuana seems to be associated with under-involvement in crashes, probably because of the drivers' awareness of its effects. Marijuana impairs time estimation and digit span recall. (3) Stimulant effects have not been studied extensively and are not commonly found in drivers. To the extent that they have been studied, they actually enhance performance. (4) Narcotic analgesics are quite rare in crash data, though experimental studies show they impair visual search, reaction time, and tracking. (5) Hallucinogens, phencyclidine, and inhalants have not been sufficiently study to demonstrate consistent behavioral effects.

Discussion:
Despite the complexity of effects, some behavioral tests are worth developing, since performance on them is differentially affected by different drugs. These include Digit Symbol Substitution Test, choice reaction time tests, short-term memory tests such as digit span, backward counting, short-term free recall, and paired-associate learning, and time estimation and production tasks.
Conclusion:
Research indicates that the variability among drugs is great. However, some behavioral measures do distinguish among different drug types, and these could be standardized used by police officers. Also, the fact that a drug is illicit, does not necessarily imply that it impairs driving.